# VANCOUVER URBAN TREE CANOPY STUDY

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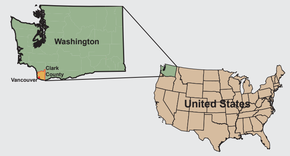
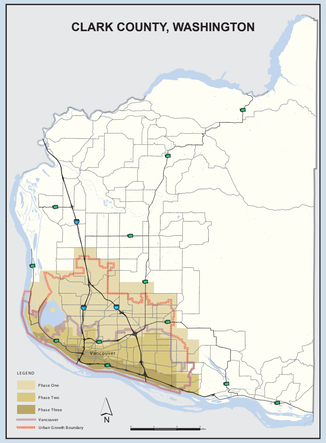



## Introduction

The City of Vancouver Parks and Recreation Department is developing a program to encourage tree planting in the greater Vancouver Urban Growth Area (UGA). To determine areas in need and to track future progress of this effort they requested a baseline canopy data set from Clark County.




Study Area

The County obtained LiDAR (Light Detection And Ranging) data and infrared (IR) imagery to create the canopy dataset. The IR imagery was obtained at two different times and is not of consistant quality, nor does it cover the entire study area. Based on these limitations, three different methods (phases) were used in creating the canopy database.

Phase 1
IR imagery from June 2002, 2 foot resolution.

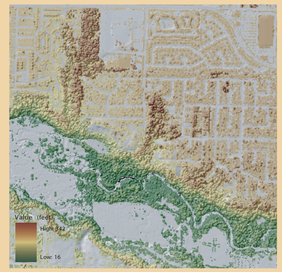
Phase 2
IR imagery from April 2002 (lower quality), 2 foot resolution.

Phase 3
No IR imagery. Canopy areas were determined by photointerpretation and existing City of Vancouver planimetric data.

This poster will focus on the methods used in Phase 1 for a given section (one square mile).

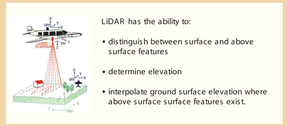
## Data

LiDAR:



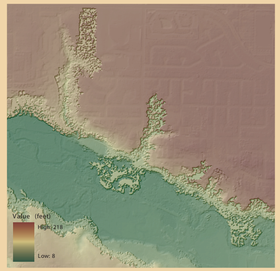

Above Surface Image

The LiDAR data was acquired and processed into a 10 foot grid resolution. Both a continuous surface grid and above surface grid were created using LiDAR's ability to separate surface and above surface features.



LiDAR has the ability to:

- distinguish between surface and above surface features
- determine elevation
- interpolate ground surface elevation where above surface surface features exist.

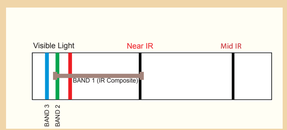



Surface Image

Infrared:

Blue Band Image

The IR imagery has a wave length of approximately .5 - .9 micrometers. The Blue Band (Band 3) has a wavelength of approximately .45 - .5 micrometers.

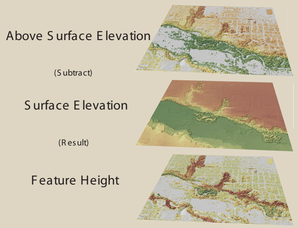


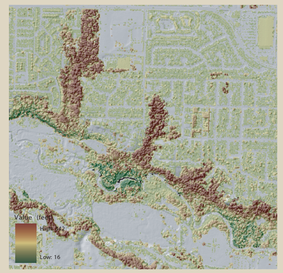

Three band IR imagery in relation to the electromagnetic spectrum

IR Composite Image

## Procedures

The feature height grid was created by subtracting the surface grid from the above surface grid. An impervious surface layer was generated by dividing the blue band image by the red band image. The impervious layer was then used as a mask on the feature height surface to create the tree canopy layer.

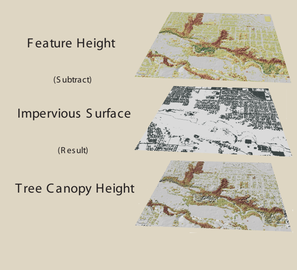


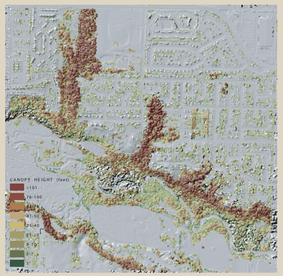




Feature Height



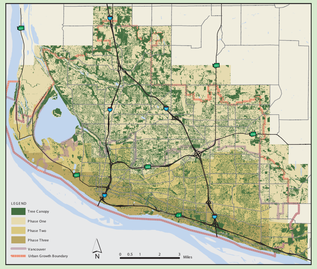

Impervious Surface



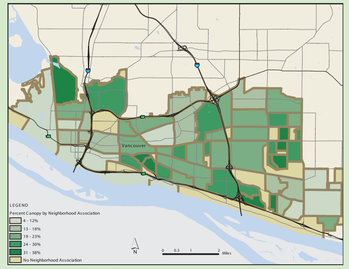

Tree Canopy Height

## Results




Study Area Canopy

The City of Vancouver will be using neighborhoods to quantify and target their efforts with this program. We created a neighborhood based percentage canopy coverage data set to assist with the planning of this project.




Percentage Canopy by Neighborhood

With this baseline canopy study, the City of Vancouver will be able to evaluate existing conditions and strategically plan their tree planting efforts. This information should also prove useful to other planning and natural resource efforts in the city and county.

Canopy Height Perspective View